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State of Philippine coastal fisheries

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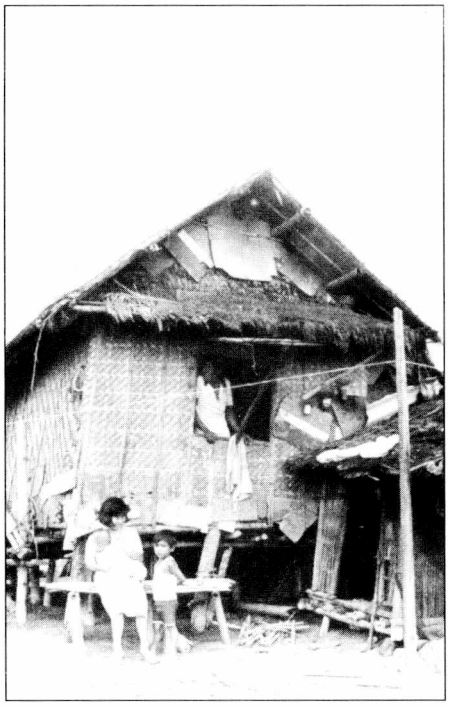
In the last 30 years, the Philippines spent billions on fisheries development programs. These include US$370 million in loan, grants, and technical assistance (ADB 1997), plus billions of pesos in counterpart and R&D funds from the government budget. Yet through these years, the country's fisheries resources have continuously been degraded. Municipal fisherfolk are poorer.

Many gatherings have discussed the various problems of coastal resource management. They have produced many volumes of proceedings on coastal and fisheries management. For decades, our researchers, resource managers, and policy makers have been participants in such conferences and users of conference proceedings. Further, international R&D organizations in the country have played increasing role in our coastal management. They have influenced local policy and management decisions. Yet the state of our coastal resources has become worse (see also Lim et al. 1995).

Most of the country's mangroves, seagrass and algal beds, and coral reefs are gone. Estuaries, the most valuable ecosystem in terms of derivable goods and services, estimated at US$23,000 per hectare per year (Costanza et al. 1997), are largely polluted. Municipal fish catch since 1991 has been declining yearly (BFAR 1997). Government programs and contracted projects have not been able to reverse the resource degradation and reduce fisherfolk poverty. This paper looks into the nature of the problems and discusses three appropriate approaches to address them.



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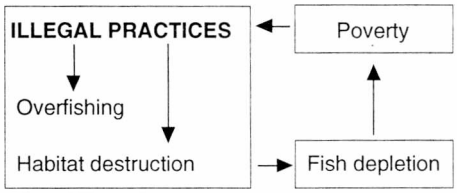
Fisheries problems: a vicious circle

The degradation of coastal resources and poverty of municipal fisherfolk are complex problems. They have been addressed individually and collectively, and in various ways, but without much success. Perhaps we should examine how the problems are related with one another, particularly their cause and effect relations:



Illegal practices are primarily responsible for overfishing and habitat destruction. They cause fish depletion, which, in turn, is the reason for the poverty among municipal fisherfolk. Persistent poverty further aggravates illegal practices, overfishing, and habitat destruction. Hence, they form a vicious circle. To break the cycle is first to recognize the driving force or main causal problem.

Note that the basic cause or culprit is the illegal entry of commercial fishers in municipal waters or failure of law enforcement. The resulting poverty leads to illegal practice by municipal fisherfolk, also the victims, to survive. Major violations include illegal entry in municipal waters, trawling and other destructive gears, and financing of cyanide fishing. They trigger the series of problems responsible for the ruined coastal environment and social discontent. Perhaps our failure in the past lies in our addressing the problems simultaneously without considering their cause and effect relations suggested in the diagram.

Problems with illegal practices, overfishing, and habitat destruction

Illegal fishing starts with the entry of commercial fishers in municipal waters. This intrusion results in unfair competition between commercial and municipal fishers. They compete for fishing grounds, with municipal fishers clearly at the losing end (Table 1). The two also compete for their main target fishes. Roundscad (*galunggong*), anchovies (*dilis*), two tunas (*tulingan* and *tambakol*), two sardines (*tunsoy* and *tamban*), and a mackerel (*alumahan*) were common in their lists of top ten fishes. These fishes made up 60% of commercial catch and 31% of municipal catch in 1995 (BFAR 1997). In one Senate hearing on the fisheries bill, a representative of commercial fishers' organizations said 90% of their catch came from within the 15-km waters. Hence, overfishing resulted and destructive gears ruined habitats.

TABLE 1. **Increasing commercial and decreasing municipal catch in common fishing grounds (in thousand tons)**

Fishing ground	Commercial catch		Municipal catch	
	1987	1995	1987	1995
Bohol Sea	14.4	69.9	34.7	13.1
Guimaras Strait	7.4	25.6	71.2	17.2
Moro Gulf	60.5	85.4	100.1	2.1
S&E Sulu Sea	75.5	199.5	141.4	67.1
West Palawan waters	5.7	187.7	11.0	13.3
Total	164	568	358	113

Source: BFAR's 1987 & 1996 Philippine Fisheries Profile.

In some places, subsistence fishers have been militant. However, they were intimidated by the sheer might and political influence of big fishers, or by the red tape commonly met in filing complaints against violators. For some of them, a last resort to survive was equally deplorable -- the use of dynamite for fishing. They justified the practice by saying that the dynamite blast was less destructive than commercial trawlers. In fact, the effects of blast fishing on corals have been overestimated and have been shown to be less than the damage caused by the use of poisons like cyanide (Saila et al. 1993), which is largely financed by commercial fishers (ADB 1997).

Problems of fish depletion and poverty

Commercial fishing in municipal waters has reduced the municipal catch yearly since 1991, with corresponding increases in commercial harvest until 1995 (Fig. 1). Their combined yearly catch during the first five years had remained the same (their average indicated by broken line). In 1996, even the commercial catch went down, indicating fish depletion.

Further, the decreasing municipal and increasing commercial catches made worse the already unjust distribution of benefits from fisheries. From the value of fish catch in 1995, the gross share of a commercial fisher was 11 times that of a municipal fisher, or an average of P420,000 against P38,000 per person. Note that the commercial fisher includes boat owner and hired hand, with the latter perhaps getting no more than the municipal fisher's share.

The figures are based on P24 billion divided by 57,000 commercial fishers and P27 billion divided by 700,000 municipal fishers. This 700,000 is a 1980 figure (BFAR 1997). Fisherfolk organizations claim there are now 1.8 million municipal fishers. This would bring the municipal fisher's share down to P15,000 per year, or about P1,000 per month if fishing costs are subtracted. A 1996 survey by the Department of Agriculture found that poverty among municipal fisherfolk in seven bays of Luzon, Visayas, and Mindanao ranges from 80 to 95%, the highest in the country (ADB 1997).

Remedial actions

Community-based law enforcement

The usual explanation for failure of law enforcement is lack of resources. Coast guard authorities, for example, say they do not have enough facilities and personnel to patrol our extensive shoreline. So the usual solution is to increase this physical capability. Another is to raise the penalties for violations.

Unfortunately, however, our long experience has shown that fishery regulations, even with strict penalty provisions, can be circumvented by influencial people. We know, for instance, that among violators of fishpen laws in Laguna Lake were powerful persons. This shows that influential people and vested interest groups can make a mockery of even the strictest fishery laws.

Existing regulations and law enforcement are therefore saddled with inherent weaknesses that defeat the goal of resource management. Thus, alternative approaches are needed. One of them is the grant to fisherfolk of territorial use rights (TURFs) over municipal waters (Siar et al. 1992, Seabrooke & Pickering 1994).

Coastal fisherfolk will have to organize themselves into fishing associations that would then be given exclusive legal rights to manage the fishing grounds in their locality. The new Fisheries Code supports this concept (Sec. 17). In effect, fishing operations will be controlled on shared basis by the municipal fishers. They can exclude outsiders or drive off intruders to protect their legal and territorial rights.

The scheme, therefore, promotes self-control, through community-imposed regulations like gear restrictions, seasonal and area closures, and catch quotas. This

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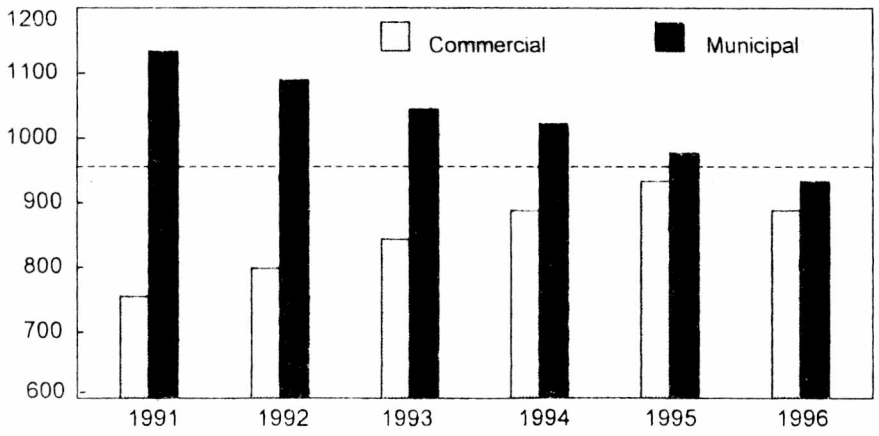

FIGURE 1. **Fish catch (in thousand metric tons)** (Source: 1995 & 1996 Philippine Fisheries Profile, Bureau of Aquatic Resources, Quezon City)

idea is not alien to the cultural makeup of our fishing villages, where social cooperation has always been present. There are long familiarity among residents, blood relationships, and other cultural ties. Giving use rights to fisherfolk organizations over their traditional source of livelihood would further cement the community spirit that already exists.

On humanitarian grounds, it is moral to give fisherfolk control over fishery resources in their area. In most coastal communities, fishing is their only means of livelihood. Fisherfolk are tied to their resource base by tradition, which are hard to break. On the other hand, big fishing enterprises in municipal waters can sell out their interest and re-invest in other business without much personal sacrifice. With enough government support, commercial fishers can confine their operation beyond municipal waters.

The grant of TURFs to fisherfolk is not a new concept. It has over a hundred years of tradition in Japan. Prototypes can also be found in Brazil, Sri Lanka, the Ivory Coast, and Papua New Guinea. Some encounter problems and constraints, but we should study each model to gain useful lessons. We can then devise methods suited under our socioeconomic, cultural, and political systems.

Management and regulatory measures have a better chance of succeeding if these are adopted and implemented by the fisherfolk themselves. Morever, with this arrangement, the government gains in terms of lesser administrative and law-enforcement costs.

Science-based restoration

Attempts to mitigate ecosystem degradation have included restoration programs. Examples are mangrove reforestation and artificial habitats. But none of them were able to catch up with the unending destruction. One would wonder if such efforts make sense when damaging activities continue. Restoration programs may not be able to reverse the present degradation, but if they include scientific studies, their continuation is justified.

Results of such investigations have provided valuable information for other restoration work (Anderson et al. 1993). Present efforts without science, even if successful, will give scant objective information to tell us how to go on with other restoration. With scientific studies in restoration programs, results can be part of the permanent scientific literature, which can be useful in the future when illegal and destructive practices would have been stopped.

The role of science in coastal management should be given more importance (Constable 1991). Whether from restorations or other management activities, the usefulness of data and information depends on their quality. This is determined by the way the data are acquired, or how research is conducted. Has a standard method been used in the investigation? Have the results been published properly, that is, in accessible journals so they can be verified by international peers? (Philippine journals have yet to meet this requirement). Most of the data and information accumulated by government agencies, academic institutions, and other R&D organizations in the country have not used standard methods, have been unpublished, or have not been published properly. They should be avoided.

A guideline for proper conduct of investigations would be needed. It will insure that further data and information gathering is done properly. Persistent production and use of poor-quality data and information in coastal management are common practices in poor countries (Lacanilao 1997). They can be the reasons why we have failed in managing our fisheries resources. The importance of science or proper conduct of research in coastal management can no longer be ignored.

Income diversification

The degraded habitats and depleted fish stock in coastal waters call for reduced fishing. This moratorium will adversely affect the municipal fisherfolk who are already suffering from poverty. Careful planning, with the reasons behind failure and successes in past livelihood programs considered, will need integrated effort of properly trained and experienced social and natural scientists.

There are hardly any examples of successful alternative livelihood that have been documented in the country's coastal areas. Most have not survived beyond the duration of the project support. There are several reasons for this. First is the absence

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of organized fisherfolk, an essential prerequisite. Even in cases where they are organized, if some of the fishers are not members, there will be resource management and law enforcement problems that will make livelihood programs fail.

Second is the absence of use rights given to the organized fisherfolk. The open access leads to use conflicts, a major cause of poverty. Third is failure to recognize the ecological links between ecosystems and ecosystem components. Fourth is lack of effective regulations or law enforcement. And fifth is the inexperience and lack of interest in livelihood activities that are not based on marine resources.

Any livelihood alternative that is resource-based is therefore hard to succeed. Mariculture of finfishes, shellfishes, and seaweeds, despite available culture technology, has been tried but could not be sustained for the above-given reasons. For example, it pollutes the water and reduces the fish catch. Any plan to go into mariculture should not rely only on available technology. It should also consider the above constraining factors, particularly its conflict with coastal management and capture fisheries (Wu 1995). Examples are the proliferation of fishpens and reduced catch of fisherfolk in Laguna Lake and Lingayen Gulf.

An alternative source of income that is directly supportive of resource management is working in government restoration programs. Tourism is another source of income, which can go along with restorations. These income alternatives are consistent with restoring coastal ecosystems, whose value or derivable benefits are better in their intact form than with any other uses. The values of marine ecosystems (Costanza et al. 1997) should be considered in planning their development for alternative use or preservation.

Livelihood ventures other than those directly using the coastal resources are other options. Unlike mariculture, they may not conflict with coastal management and

may not require organized fisherfolk, although cooperatives have operating advantages. Problems to be overcome include the fisherfolk inexperience and lack of interest in non-familiar livelihood activities. This is attested by their not resorting to micro-enterprise activities despite extreme poverty brought about by resource depletion and unfair competition. Still, a livelihood program that is not resource-based has better chances, under degraded coastal environment, of reducing the fisherfolk poverty.

Conclusion

Two most serious problems of Philippine fisheries are coastal degradation and poverty. They are the outcome of illegal fishing practices dominated by commercial fishers. The cyclic nature of the problems' cause and effect relations has made them worse and hard to solve. What we need is an integrated approach focused at illegal practices and involving all stakeholders. Crucial is the role of the government, commercial fishers, municipal fisherfolk, and scientists. Of the suggested remedial actions — people-led law enforcement, science-based restoration, and income diversification — the last is the least promising. But if guided by ecological principles and lessons from past administrative actions and program implementation, our efforts will achieve overall success. We will then be able to reverse coastal degradation and reduce fisherfolk poverty.

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